

## CLAIMS

1. A fuel cell comprising: a polymer electrolyte membrane; an anode and a cathode sandwiching the polymer electrolyte membrane; and an anode-side separator plate and a cathode-side separator plate sandwiching the anode and the cathode, the anode-side separator plate having a gas flow channel for supplying a fuel gas to the anode, the cathode-side separator plate having a gas flow channel for supplying an oxidant gas to the cathode, wherein each of the anode and the cathode comprises a catalyst layer and a gas diffusion layer, the gas diffusion layer comprises a first section having a surface A that comes in direct contact with the anode-side or cathode-side separator plate and a second section having a surface B that faces the gas flow channel of the anode-side or cathode-side separator plate, the porosity of the first section is lower than the porosity of the second section, and the second section protrudes into the gas flow channel.

2. The fuel cell in accordance with claim 1, wherein the ratio of the porosity of the first section of the gas diffusion layer to the porosity of the second section is 0.20 to 0.85.

3. The fuel cell in accordance with claim 1, wherein the second section of the gas diffusion layer protrudes into the gas flow channel by 0.10 to 0.25 mm.

4. The fuel cell in accordance with claim 2, wherein

the second section of the gas diffusion layer protrudes into the gas flow channel by 0.10 to 0.25 mm.

5. The fuel cell in accordance with claim 1, wherein the gas flow channel has a width of 1.0 to 2.0 mm and a depth of 1.0 to 2.0 mm, and a rib formed by the gas flow channel has a width of 0.5 to 1.0 mm.

6. The fuel cell in accordance with claim 2, wherein the gas flow channel has a width of 1.0 to 2.0 mm and a depth of 1.0 to 2.0 mm, and a rib formed by the gas flow channel has a width of 0.5 to 1.0 mm.

7. The fuel cell in accordance with claim 3, wherein the gas flow channel has a width of 1.0 to 2.0 mm and a depth of 1.0 to 2.0 mm, and a rib formed by the gas flow channel has a width of 0.5 to 1.0 mm.

8. The fuel cell in accordance with claim 4, wherein the gas flow channel has a width of 1.0 to 2.0 mm and a depth of 1.0 to 2.0 mm, and a rib formed by the gas flow channel has a width of 0.5 to 1.0 mm.